



BookMates

Un sistema di raccomandazione
per compagni di lettura

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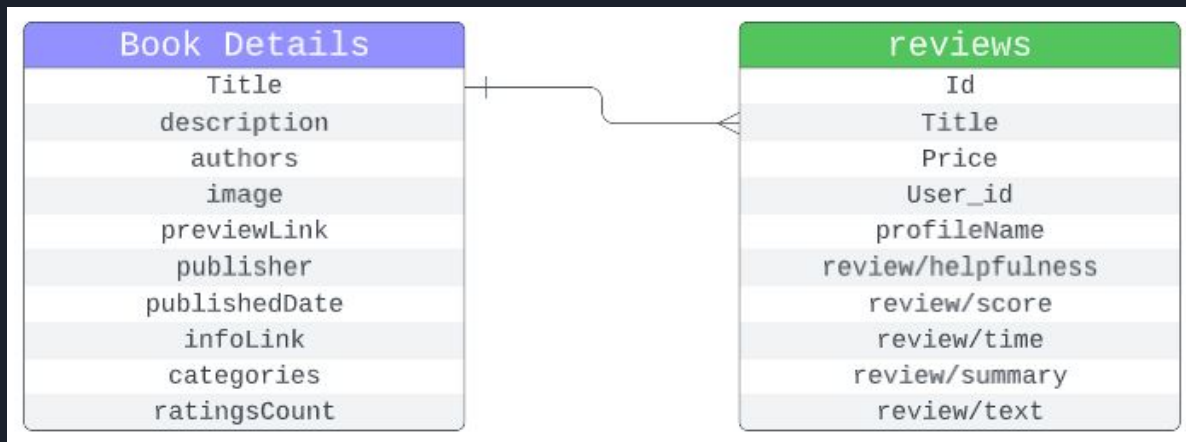


STATO DELL'ARTE

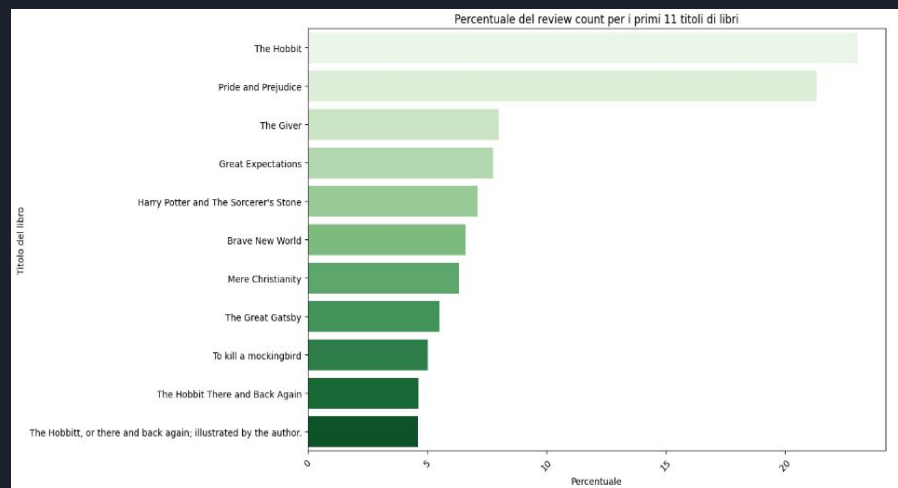
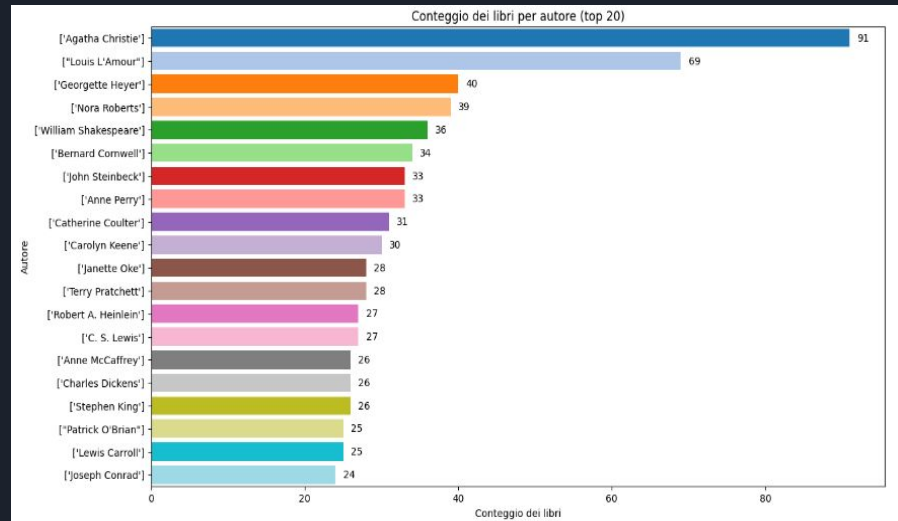
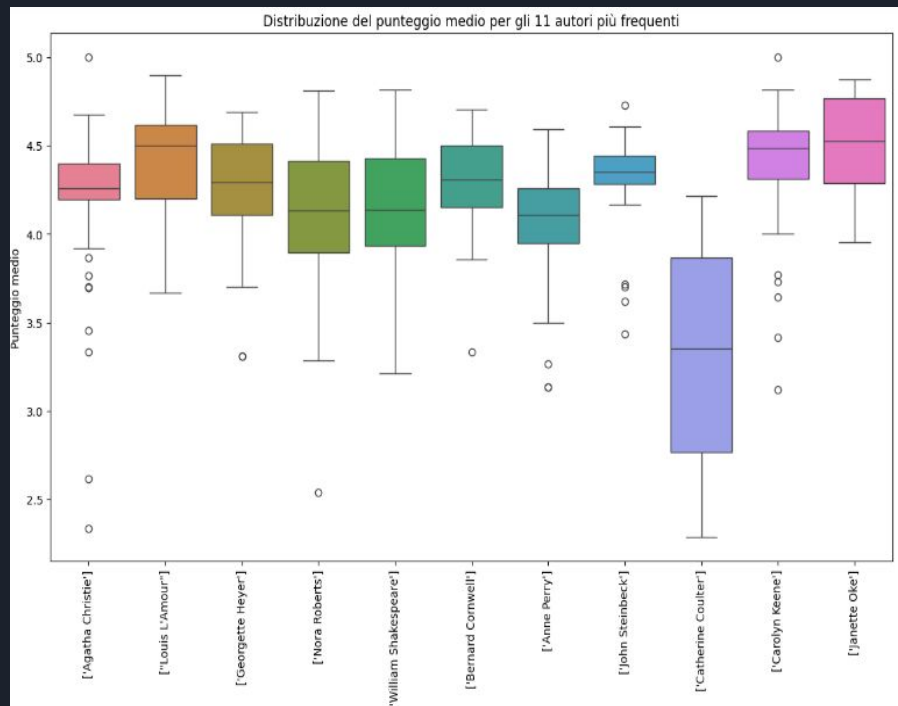
- Sistemi di raccomandazione in generale hanno raggiunto un livello molto avanzato grazie all'AI
- Algoritmi quali collaborative filtering e content-based filtering
- Uso di tecniche avanzate di deep learning come le reti neurali
- Catturano sia la similarità tra contenuti sia la soddisfazione e caratteristiche degli utenti
- Alcuni esempi:
 - Goodreads: approccio basato sul collaborative filtering
 - Amazon: approccio basato su collaborative filtering, content-based filtering e knowledge-based recommendations

INTRODUZIONE e DATI UTILIZZATI

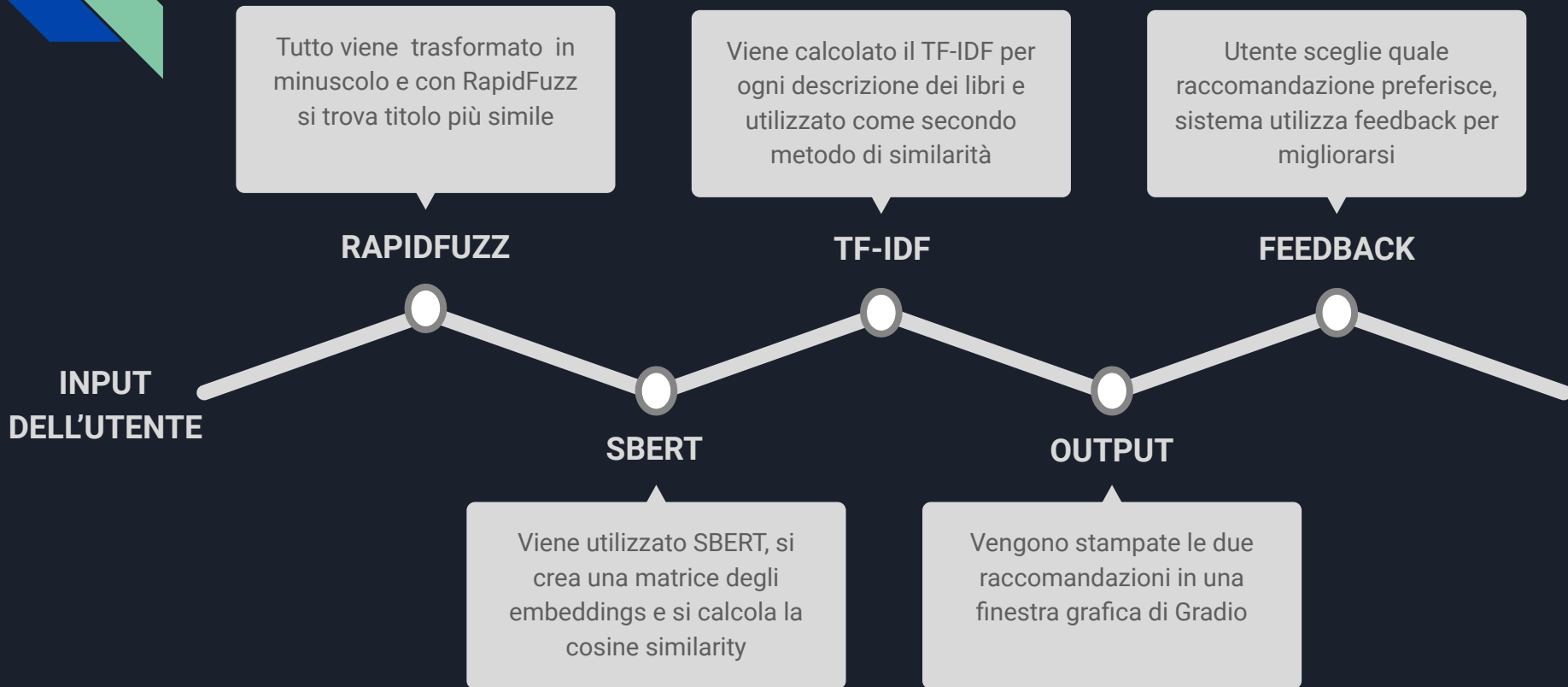
- Obiettivo: creazione di un sistema di raccomandazione per libri basato su diversi fattori di similarità tra libri e utenti
- Due dataset a disposizione da sito kaggle :
 - Informazioni sui libri (circa 32 mila record): autore, titolo, categoria, descrizione, ...
 - Recensioni (circa 3 milioni di record): punteggio, recensione, ...



ALCUNI INSIGHTS SUI DATI



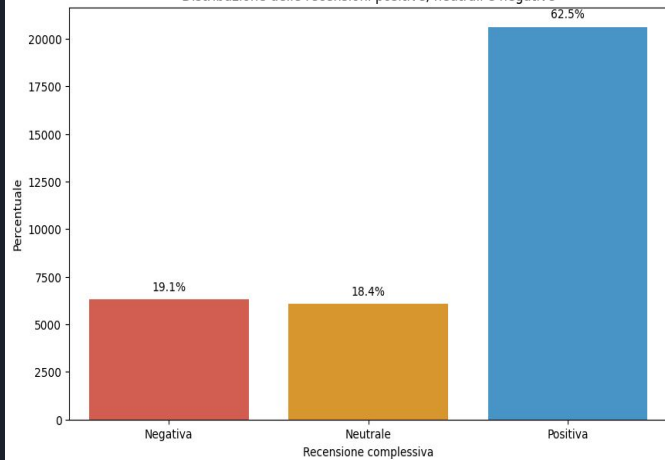
SISTEMA DI RACCOMANDAZIONE



SENTIMENT ANALYSIS e LIME

- Preprocessing dei testi
- Creazione dei token con BERT
- Modello CNN per categorizzare recensioni
- Lime con prediction score ottenute con le CNN e parole tokenizzate da BERT
- Parole più importanti utilizzate per spiegare la classificazione della recensione

Distribuzione delle recensioni positive, neutrali e negative

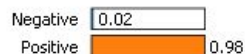


```
Epoch 1/2
1335/1335 [=====] - 342s 255ms/step - loss: 0.3752 - accuracy: 0.8367
Epoch 2/2
1335/1335 [=====] - 343s 257ms/step - loss: 0.1780 - accuracy: 0.9348
334/334 [=====] - 18s 52ms/step - loss: 0.3125 - accuracy: 0.8689
334/334 [=====] - 18s 53ms/step
```

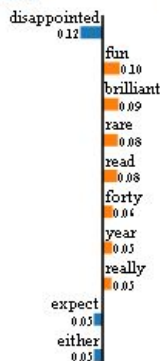
	precision	recall	f1-score	support
0	0.71	0.72	0.71	1216
1	0.92	0.91	0.91	4123
accuracy			0.87	5339
macro avg	0.81	0.82	0.81	5339
weighted avg	0.87	0.87	0.87	5339

Esempio con recensione positiva

Prediction probabilities



Negative



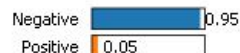
Positive

Text with highlighted words

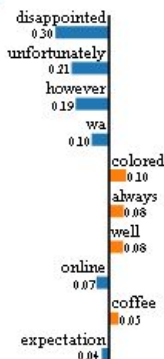
forty year reading fantasy novel find either brilliant rare flawed lot drek new greenwood book is good flawed try anything popcorn beer reading give the reader whumping ride lot cinematic scene blasting action little touch characterization tell people real care really liked buy sequel appear expect lord of the ring disappointed expect really fun read

Esempio con recensione negativa

Prediction probabilities



Negative



Positive

Text with highlighted words

bought this book read glowing praise online library site unfortunately wa deeply disappointed page three always buy book hope expectation enjoyable read criticise however this book urgent need editing though quite possibly editing alone save example bed squeak slightly sharply sentence nightgown hang freely girlish figure olive colored complexion coffee aroma huddle rumbling cloud huddle well coffee prepared sip coffee beneath wrath god cuddled within arm strong breeze wrath god breeze columbian stet coffee aroma danced beneath sculpted tan nose coffee bean fragrance tangoed within body placed thick pink lip warm cup page three quite possible storyline deeply moving never know bring continue sorry

INTERFACCIA UTENTE CON GRADIO

Sistema di Raccomandazione di Libri

Inserisci il titolo di un libro

harry potter

Raccomandazioni basate su Embeddings

Title	authors
harry potter & the prisoner of azkaban	['Lisa S. Brenner']
monotype: mediums and methods for painterly printmaking (practical art books)	['Katherine Ziff']
harry potter and philosophy: if aristotle ran hogwarts	['David Baggett', 'Shawn Klein', 'William Irwin']
collected stories	['Donald Margulies']
what good are the arts?	['John Carey']
the merchant of venice: william shakespeare (new casebooks)	['Martin Coyle']
fingerpainting on the moon: writing and creativity as a path to freedom	['Peter Levitt']
stage makeup: the actor's complete guide to today's techniques and materials (watson guphill famous artists)	['Stephen M. Archer', 'Cynthia M. Gendrich', 'Woodrow B. Hood']
the science of harry potter: how magic really works	['Roger Highfield']
play therapy: the art of the relationship	['Garry L. Landreth']

Raccomandazioni basate su TF-IDF

Title	authors	categories
harry potter & the prisoner of azkaban	['Lisa S. Brenner']	['Literary Criticism']
the saudi arabian economy: policies, achievements, and challenges	['Mohamed A. Ramady']	['Business & Economics']
utopia and cosmopolis: globalization in the era of american literary realism (new americanists)	['Thomas Peyser']	['Literary Criticism']
the lever of riches: technological creativity and economic progress	['Joel Mokyr']	['History']
come to the table: revisioning the lord's supper	['John Mark Hicks']	['Religion']
the lord of the rings and philosophy: one book to rule them all (popular culture and philosophy)	['Gregory Bassham', 'Eric Bronson']	['Philosophy']
mathematical ideas	['Tony Crilly']	['Mathematics']
man-made ufos, 1944-1994: fifty years of suppression	['Renato Vesco', 'David Hatcher Childress']	['Body, Mind & Spirit']
the europeans	['Orlando Figes']	['History']
the illuminati	['Mark Dice']	['Family & Relationships']

Quale output preferisci? Una volta selezionato l'output che preferisci, clicca nuovamente su 'Invia'

☒ Embeddings

☐ TF-IDF

Invia

Sistema di Raccomandazione di Libri

Inserisci il titolo di un libro

Troilus and Cressida

Raccomandazioni basate su Embeddings

Title	authors	categories	rating_mean	prediction	influential_words
troilus and cressida	['William Shakespeare']	['Drama']	3.5	1	shakespeare, criseyde, english, work, role
troilus and cressida, (the modern library of the world's best books)	['William Shakespeare']	['Drama']	3.388888888888889	1	english, modernized, poem, prospective, actual
death comes as the end	['Agatha Christie']	['Detective and mystery stories']	4.574468885106383	1	shakespeare, word, else, describe, still
death comes as the end	['Agatha Christie']	['Detective and mystery stories']	4.574468885106383	1	shakespeare, insurmountable, elizabethan, contemplating, supreme
as you like it (bantam classics)	['William Shakespeare']	['Drama']	4.310344827586207	1	quot, glossaryterms, shakespeare, tragediespresented, dorenbring
the comedy of errors (new folger library shakespeare)	['William Shakespeare']	['Drama']	4.428571428571429	1	quot, montagues, juliet, capulets, dead
hickory dickory death	['Agatha Christie']	['Detective and mystery stories']	3.333333333333333	1	shakespeare, wonderfully, price, low, volume
four tragedies	['William Shakespeare']	['Drama']	4.7	1	quot, sonnet, midsummer, naxos, pas
the merchant of venice (folger library general readers shakespeare)	['William Shakespeare']	['Drama']	4.104166666666667	1	arden, pricey, hie, spot, complete
the picture of dorian gray and other short stories (signet classics)	['Oscar Wilde']	['Fiction']	4.173913043478261	1	shakespeare, decree, ostensibly, never, cold

Raccomandazioni basate su TF-IDF

prediction	influential_words	SimilarityTFIDF	summary
1	shakespeare, criseyde, english, work, role	1	Shakespeare's inspiration for "Troilus and Cressida" is Homer's "The Iliad"
1	english, modernized, poem, prospective, actual	0.3318988324533975	A collection of Shakespearean tragedies, including the full texts of Troilus and Cressida, Hamlet, and Romeo and Juliet.
1	shakespeare, word, else, describe, still	0.3288535747389955	This leather-bound edition includes the complete works of the playwright William Shakespeare.
1	shakespeare, insurmountable, elizabethan, contemplating, supreme	0.3114102977257488	Shakespeare's The Comedy of Errors is the slapstick farce of his youth.
1	quot, glossaryterms, shakespeare, tragediespresented, dorenbring	0.2925370959056951	Hamlet is one of the most famous plays of all time. Othello is a great tragedy.
1	quot, montagues, juliet, capulets, dead	0.27459060609586261	Romeo and Juliet is the most famous love story of all time. It is based on a story by Arthur Brooke.
1	shakespeare, wonderfully, price, low, volume	0.25530367910158265	The second Oxford edition of Shakespeare's Complete Works reconsiders the canon.
1	quot, sonnet, midsummer, naxos, pas	0.2505185954414769	The authoritative edition of Shakespeare's Sonnets and Poems from The Norton Shakespeare.
1	arden, pricey, hie, spot, complete	0.2504180431896109	The Complete Works contains the texts of all Shakespeare's plays, poems, and prose.
1	shakespeare, decree, ostensibly, never, cold	0.24546805324609508	In creating Shylock, Shakespeare seems to have shared in a widespread prejudice against Jews.

Quale output preferisci? Una volta selezionato l'output che preferisci, clicca nuovamente su 'Invia'

☒ Embeddings

☐ TF-IDF

Invia



LIMITI E PROSPETTIVE FUTURE

- Riduzione della dimensionalità del dataset
- Utilizzo di modelli leggeri per problemi computazionali
- Miglioramento continuo grazie ai feedback degli utenti
- Integrazione di Neo4j per l'analisi delle reti sociali
- Espansione del dataset e utilizzo di modelli più complessi (ad esempio ROBERTA)
- Personalizzazione avanzata

GRAZIE
DELL'ATTENZIONE

